Cisco Networking Academy®
Mind Wide Open™

PRUEBA DE HABILIDADES PRÁCTICAS

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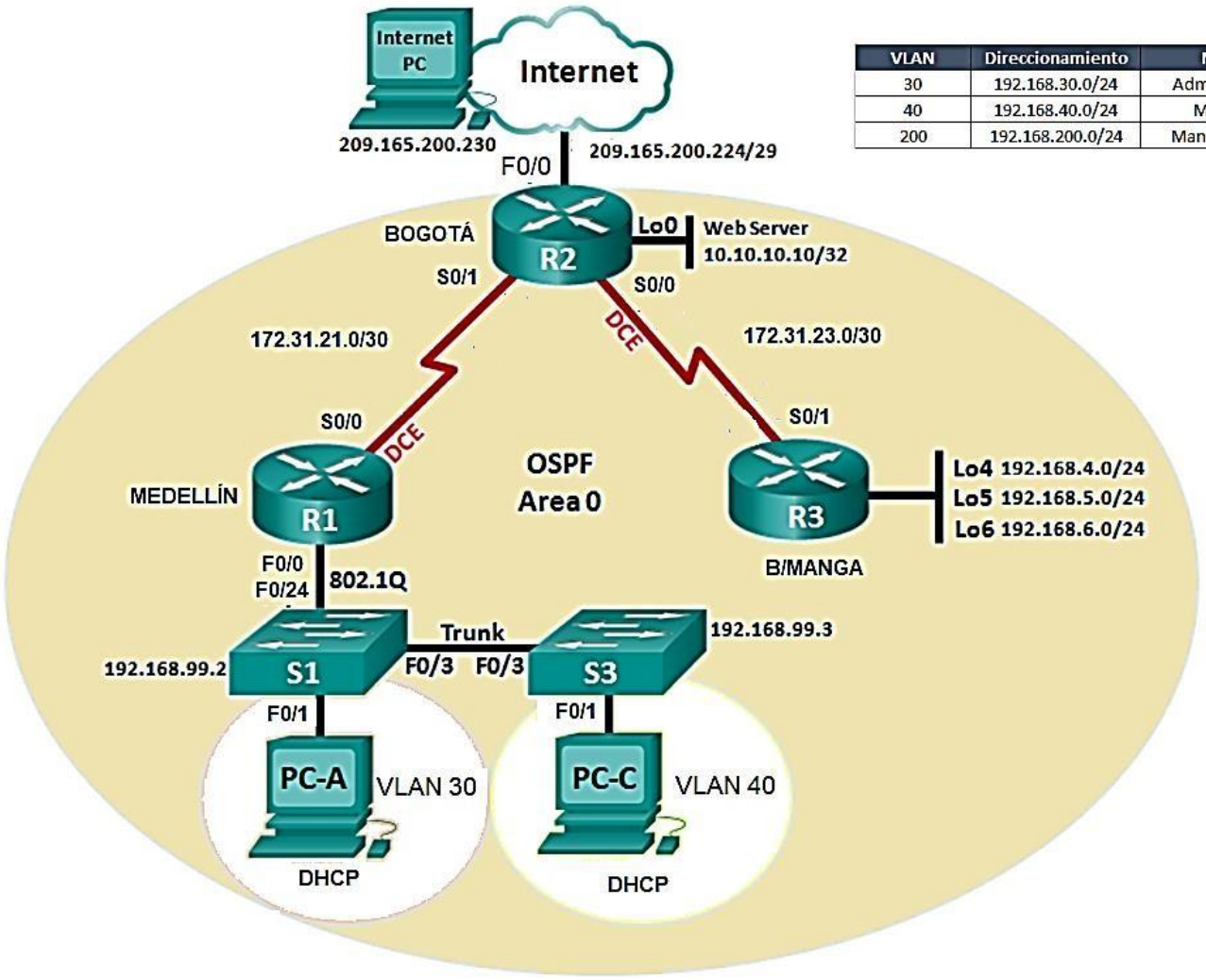
2018

Descripción del escenario propuesto para la prueba de habilidades

Escenario: Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Bogotá, Medellín y Bucaramanga, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

Topología de red



VLAN	Direccionamiento	Nombre
30	192.168.30.0/24	Administración
40	192.168.40.0/24	Mercadeo
200	192.168.200.0/24	Mantenimiento

1. Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

OSPFv2 area 0

Configuration Item or Task	Specification
Router ID R1	1.1.1.1
Router ID R2	2.2.2.2
Router ID R3	3.3.3.3
Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	128 Kb/s
Ajustar el costo en la métrica de S0/0 a	7500

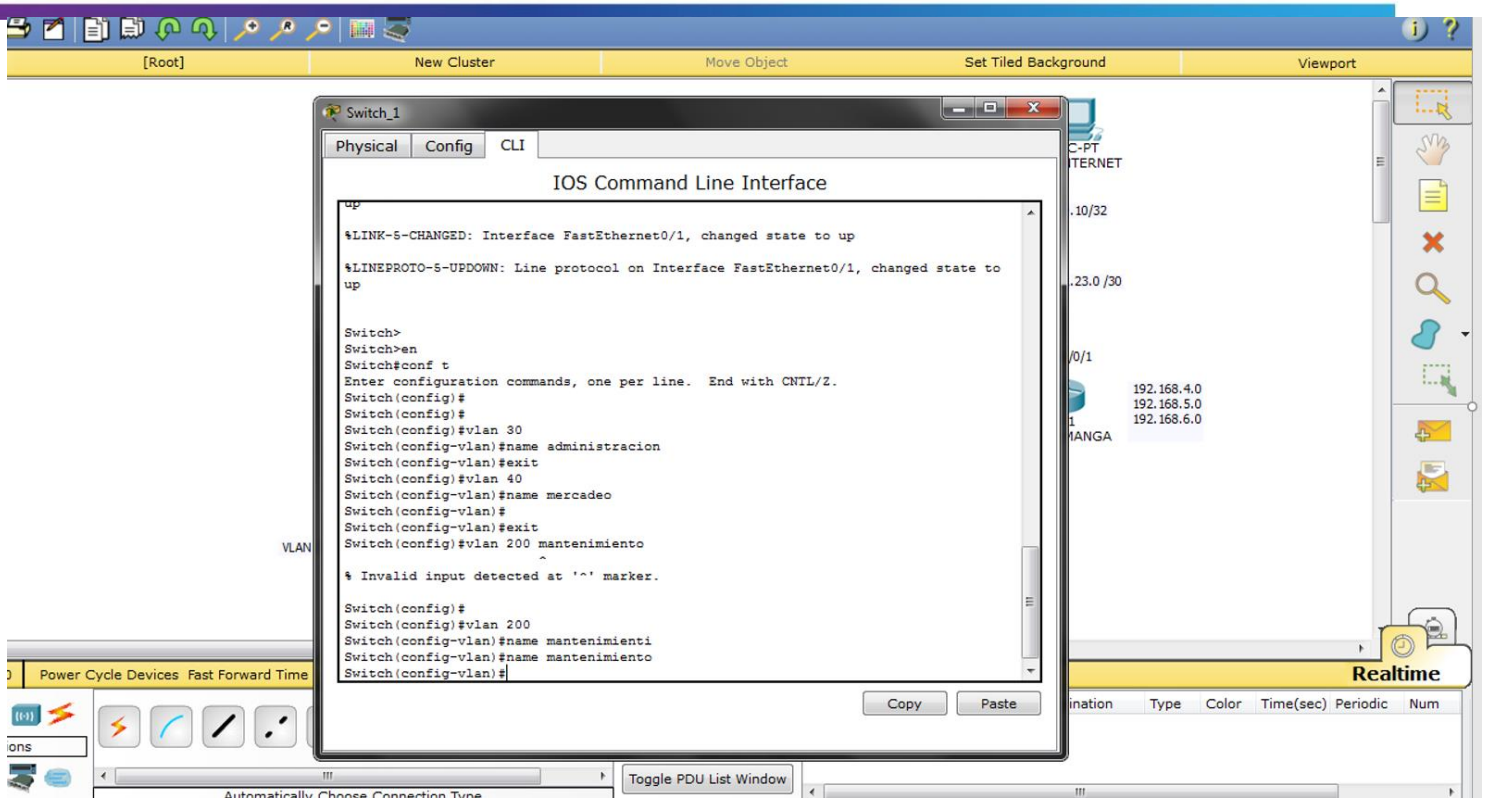
Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2
- Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface
- Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.

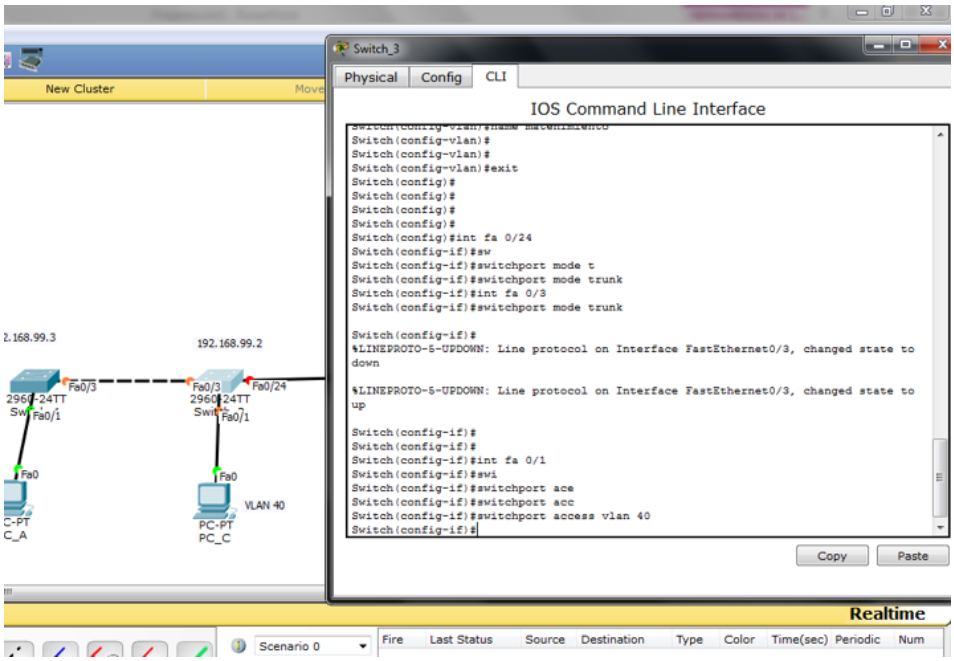
```
!
router ospf 1
 router-id 1.1.1.1
 log-adjacency-changes
 network 172.31.21.0 0.0.0.3 area 0
 network 192.168.30.0 0.0.0.255 area 0
 network 192.168.40.0 0.0.0.255 area 0
 network 192.168.200.0 0.0.0.255 area 0
!
ip classless
!
ip flow-export version 9
!
!
access-list 2 deny 192.168.40.0 0.0.0.255
access-list 2 permit any
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
```

```
router ospf 1
 router-id 2.2.2.2
 log-adjacency-changes
 network 172.31.21.0 0.0.0.3 area 0
 network 172.31.23.0 0.0.0.3 area 0
 network 10.10.10.10 0.0.0.0 area 0
 network 209.165.200.224 0.0.0.7 area 0
!
ip nat inside source list 10 interface GigabitEthernet0/0 overload
ip classless
!
ip flow-export version 9
!
!
access-list 10 permit 192.168.0.0 0.0.255.255
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
```

2. Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.



3. En el Switch 3 deshabilitar DNS lookup



4. Asignar direcciones IP a los Switches acorde a los lineamientos.

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state
to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.40, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.200, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on Serial0/0/0 from LOADING to
FULL, Loading Done


MEDELLIN>
MEDELLIN>en
MEDELLIN#sh
MEDELLIN#show acc
MEDELLIN#show access-lists
Standard IP access list 2
    10 deny 192.168.40.0 0.0.0.255
    20 permit any
MEDELLIN#
MEDELLIN#
```

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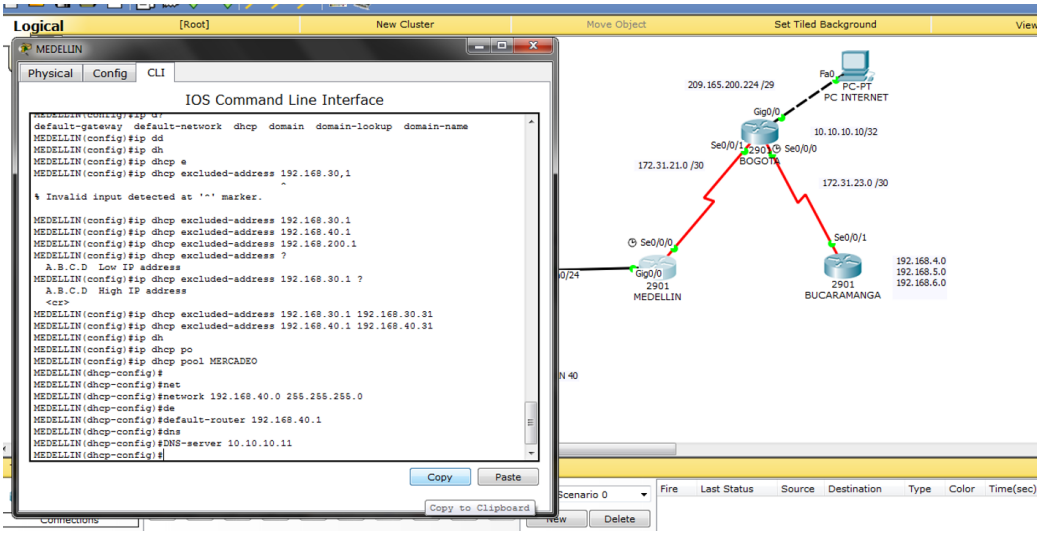
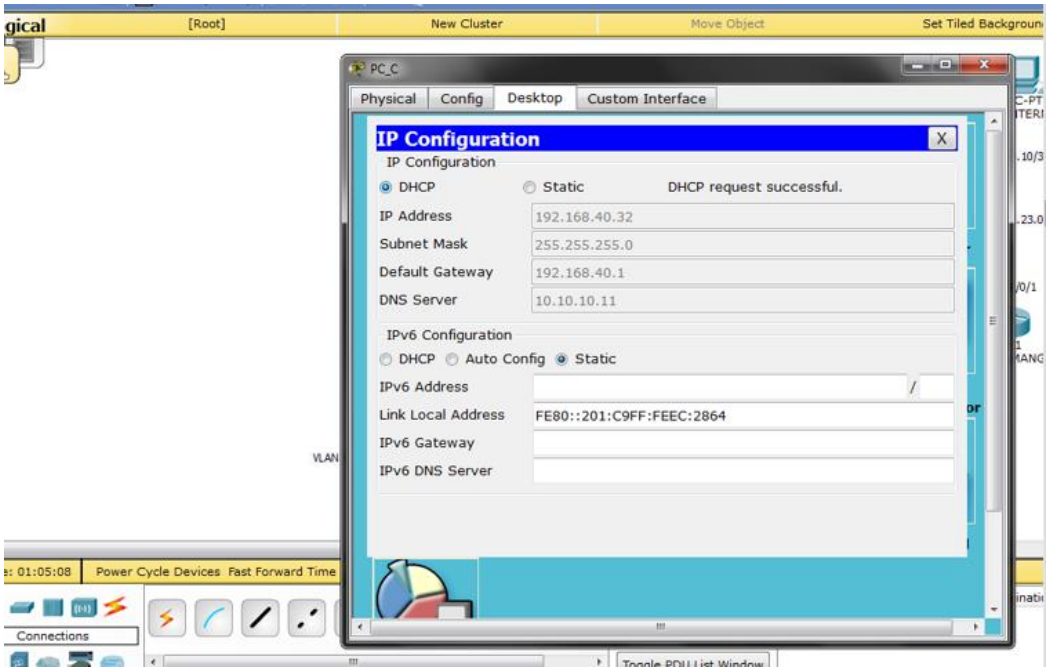
```
BUCARAMANGA(config)#
BUCARAMANGA(config)#inter
BUCARAMANGA(config)#interface vlan 201
BUCARAMANGA(config-if)#
BUCARAMANGA(config-if)#
BUCARAMANGA(config-if)#ip ad
BUCARAMANGA(config-if)#ip address 10.3.3
                                   ^
% Invalid input detected at '^' marker.

BUCARAMANGA(config-if)#ip address 10.3.3.1
% Incomplete command.
BUCARAMANGA(config-if)#ip address 10.3.3.1 255.255.255.0
BUCARAMANGA(config-if)#
```

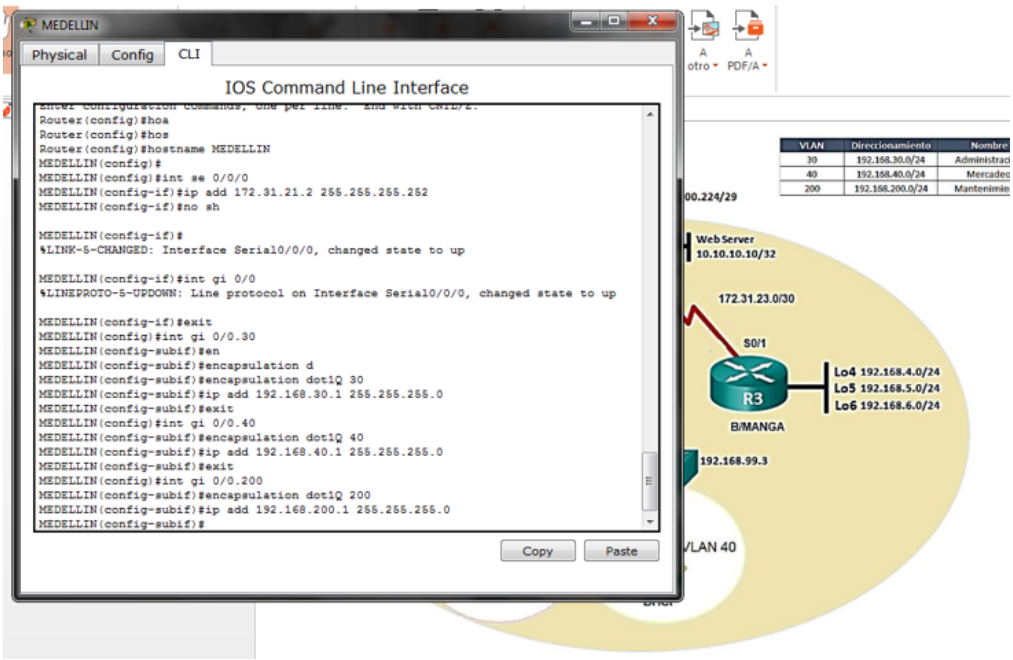
5. Desactivar todas las interfaces que no sean utilizadas en el esquema de red.



6. Implement DHCP and NAT for IPv4



7. Configurar R1 como servidor DHCP para las VLANs 30 y 40.



8. Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

Configurar DHCP pool para VLAN 30	Name: ADMINISTRACION DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.

Configurar DHCP pool para VLAN 40	Name: MERCADEO DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.

```
no service password-encryption
!
hostname MEDELLIN
!
!
!
!
ip dhcp excluded-address 192.168.30.1
ip dhcp excluded-address 192.168.40.1
ip dhcp excluded-address 192.168.200.1
ip dhcp excluded-address 192.168.30.1 192.168.30.31
ip dhcp excluded-address 192.168.40.1 192.168.40.31
!
ip dhcp pool ADMINISTRACION
 network 192.168.30.0 255.255.255.0
 default-router 192.168.30.1
 dns-server 10.10.10.11
ip dhcp pool MERCADEO
 network 192.168.40.0 255.255.255.0
 default-router 192.168.40.1
 dns-server 10.10.10.11
!
!
!
no ip cef
```

9. Configurar NAT en R2 para permitir que los host puedan salir a internet

```
!
router ospf 1
 router-id 2.2.2.2
 log-adjacency-changes
 network 172.31.21.0 0.0.0.3 area 0
 network 172.31.23.0 0.0.0.3 area 0
 network 10.10.10.10 0.0.0.0 area 0
 network 209.165.200.224 0.0.0.7 area 0
!
ip nat inside source list 10 interface GigabitEthernet0/0 overload
ip classless
!
ip flow-export version 9
!
!
access-list 10 permit 192.168.0.0 0.0.255.255
!
!
!
```

10. Configurar al menos dos listas de acceso de tipo estándar a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state
to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.40, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.200, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on Serial0/0/0 from LOADING to
FULL, Loading Done


MEDELLIN>
MEDELLIN>en
MEDELLIN#sh
MEDELLIN#show acc
MEDELLIN#show access-lists
Standard IP access list 2
    10 deny 192.168.40.0 0.0.0.255
    20 permit any
MEDELLIN#
MEDELLIN#
```

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11. Configurar al menos dos listas de acceso de tipo extendido o nombradas a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

BUCARAMANGA

Physical Config CLI

IOS Command Line Interface

```
2 Low-speed serial(sync/async) network interface(s)
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!


%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on Serial0/0/1 from LOADING to
FULL, Loading Done


BUCARAMANGA>
BUCARAMANGA>en
BUCARAMANGA#
BUCARAMANGA#sh
BUCARAMANGA#show acc
BUCARAMANGA#show access-lists
Extended IP access list 100
    10 permit ip 192.168.4.0 0.0.0.255 host 10.10.10.10
    20 permit ip any any
Extended IP access list 101
    10 deny ip 192.168.5.0 0.0.0.255 209.165.200.224 0.0.0.7
    20 permit ip any any
BUCARAMANGA#
```

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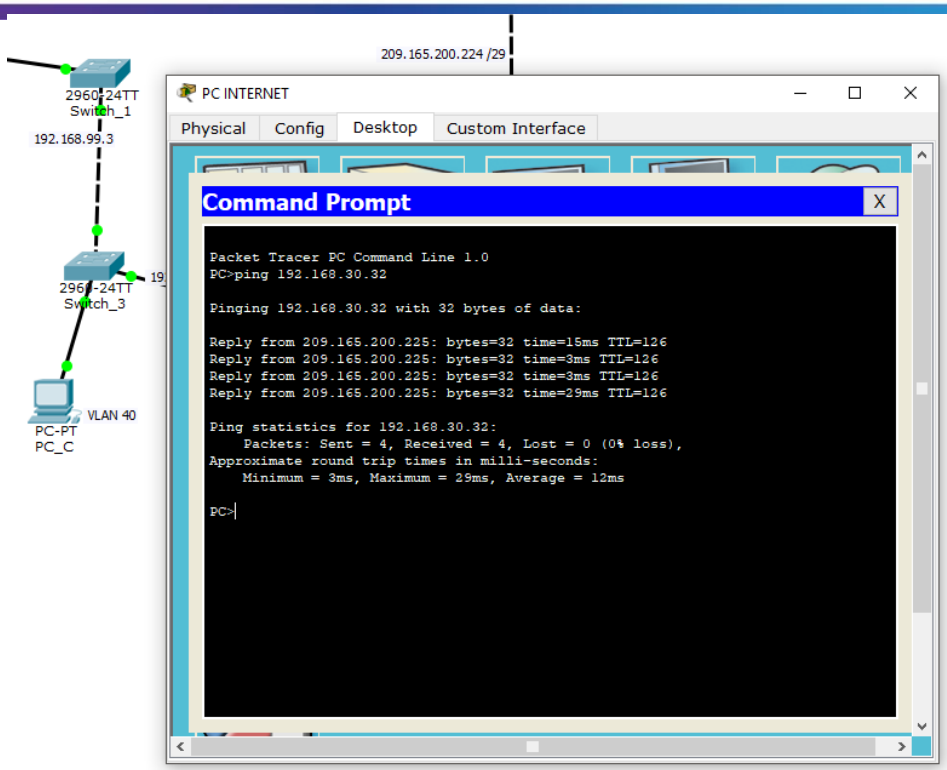
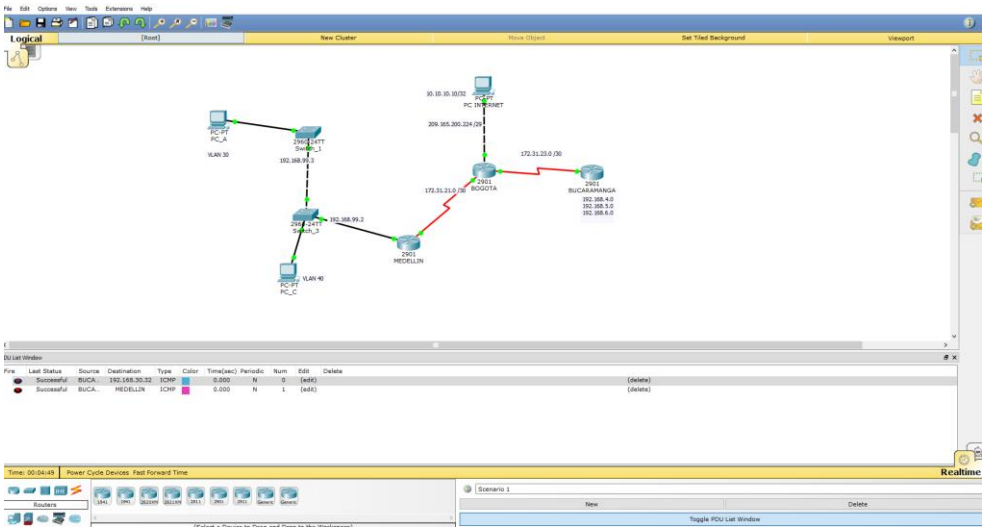
12. Verificar procesos de comunicación y redireccionamiento de tráfico en los routers mediante el uso de Ping y Traceroute.


209.165.200.224 /29
2960-24TT
Switch_1
192.168.99.3
2960-24TT
Switch_3
VLAN 40
PC-PT
PC_C
PC INTERNET
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 192.168.30.32
Pinging 192.168.30.32 with 32 bytes of data:
Reply from 209.165.200.225: bytes=32 time=15ms TTL=126
Reply from 209.165.200.225: bytes=32 time=3ms TTL=126
Reply from 209.165.200.225: bytes=32 time=3ms TTL=126
Reply from 209.165.200.225: bytes=32 time=29ms TTL=126
Ping statistics for 192.168.30.32:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 3ms, Maximum = 29ms, Average = 12ms
PC>


Logical
BOGOTA
BUCARAMANGA
MEDELLIN
Realtime